OVARIAN CANCER

BACKGROUND

Facts about ovarian cancer

- Ovarian cancer is rare in women under 40 years of age. In Massachusetts, the median age at diagnosis for ovarian cancer is 64 years.
- Ovarian cancer is the seventh most common cancer among women in the United States.
- Ovarian cancer often does not show general signs or symptoms until the disease is at an advanced stage. The diagnosis is therefore usually made late in the course of the disease.
- The exact causes of ovarian cancer are not clearly known.
- The sooner ovarian cancer is found and treated, the better a woman's chance for recovery.

What is ovarian cancer?

- The ovaries are a pair of female organs located in the pelvis (the lower part of the abdomen located between the hip bones in the female), one on each side of the uterus (the hollow, pear shaped organ where babies are carried, located in a women's lower abdomen, between the bladder and the rectum). The ovaries produce eggs and the female hormones, estrogen and progesterone.

- Ovarian cancer starts in a woman's ovaries and can develop from several cell types including epithelial cells (the outer surface), germ cells (the cells that produce eggs), and stromal cells (the tissue that holds organs in place).

- Ovarian cancer is the abnormal growth of ovarian cells forming a mass or tumor.

- Approximately 85-90% of ovarian cancers are called epithelial cell cancers. This type of tumor begins in the cells that cover the surface of the ovary.

What are the signs and symptoms of ovarian cancer?

Ovarian cancer often has no symptoms; however there are some signs that may indicate it. They include:

- Swelling of the stomach (abdomen) from a buildup of fluid or bloating.
- Long term stomach pain or indigestion.
- Gas.
- Constipation.
- Diarrhea.
- Feeling pelvic pressure or the constant need to urinate.
- Bleeding that is not part of a normal menstrual period.
- Tiredness.
- Losing or gaining weight without trying.
- Back or leg pain.

Having these symptoms does not necessarily mean that you have ovarian cancer. Many of the above symptoms can be caused by other conditions. If you have any of them, see your health care professional right away to find out for sure.

What are the risk factors for ovarian cancer?

Risk factors for ovarian cancer include:

- Age.
- Infertility and/or never being pregnant.
- Personal history of breast, endometrial (lining of the uterus), or colon cancer.
- Family history of ovarian cancer (mother, sister, or daughter).
- Having one of three inherited ovarian cancer conditions:
    - breast-ovarian cancer syndrome.
    - site-specific ovarian cancer syndrome.
    - hereditary nonpolyposis colorectal cancer or Lynch II syndrome (includes early-onset colorectal cancer, endometrial cancer, breast cancer and ovarian cancer).
- Ashkenazi Jewish ethnicity.
- Caucasian.

Possible risk factors for ovarian cancer include:

- Use of fertility drugs.
- High fat diet.
- Use of talc powder containing asbestos fibers in the vulva or vaginal area.

PREVENTION AND SCREENING

How can I reduce my risk of developing ovarian cancer?

Most of the factors that influence the risk of ovarian cancer are related to contraception and childbearing. Most women do not make reproductive choices based on their disease risk. These decisions are complex and will most likely be dictated by other concerns in a woman's life.

This list represents health and lifestyle decisions that can or may change your risk of ovarian cancer. Any decisions made based on this list should be discussed with your health care provider.

- Pregnancy and breastfeeding seem to lower the risk of ovarian cancer, especially if the woman has her first baby before 30 years old.
- Use of birth control pills may decrease the risk of developing ovarian cancer, especially if used for more than five years.
- Tubal ligation or “tying” the tubes after the childbearing years may reduce ovarian cancer for women, especially if they have the genetic mutation BRCA1.
- Hysterectomy or removal of all the reproductive organs after the childbearing years may reduce ovarian cancer for women at high risk.
- A high fat diet may increase the risk of ovarian cancer. The recommended diet includes eating a variety of healthful foods, with an emphasis on plant sources. Eat at least five servings of fruits and vegetables every day, as well as servings of whole grain foods from

plant sources such as breads, cereals, grain products, rice, pasta, or beans. Eat less red meat, especially those high in fat or processed.
- The use of aspirin is being researched now for a possible link to reducing the risk of ovarian cancer.

Screening for ovarian cancer

There is no reliable screening test for the early detection of ovarian cancer. However, women should have:

- Annual pelvic examinations as a part of a routine medical check-up.
- All women should have a complete family health history taken by a health care professional who knows how to assess the risks associated with ovarian cancer.
- Any woman with a strong family history of ovarian cancer might want to consider genetic counseling and possibly genetic testing.
- Any woman with a strong family history of ovarian cancer may want to talk with their health care provider to determine if using a transvaginal sonography (an ultrasound taken from inside the vagina to see if there are any masses on the ovaries) as a screening tool would be appropriate form them.
- A blood test (CA 125) is available to test for a tumor marker that is elevated in the blood of many patients with ovarian cancer. This marker should not be used as a screening test because it can be detected in benign conditions such as menstruation, pelvic inflammatory disease, pregnancy, endometriosis, and fibroids.

Additional research is in progress to develop new ovarian cancer screening tests. It is hoped that further improvements will lead to a test that is effective enough to lower the ovarian cancer death rate.

DIAGNOSIS AND TREATMENT

This site provides general information that may apply to your specific situation. You may visit the National Cancer Institute's web site www.cancer.gov for the most current cancer information and clinical trials. Once there, you will be able to select from a full range of cancer topics. If you want to speak with a cancer information expert confidentially, you may call 1-800-4CANCER (1-800-422-6237) between 9:00 AM - 4:30 PM.

It is always best to discuss your personal risk for cancer as well as your screening, diagnosis and treatment needs with your health care provider before you commit to a course of action.

How is ovarian cancer diagnosed?

If ovarian cancer is suspected, a doctor or surgeon who specializes in treating women with this type of cancer might perform a series of procedures to help determine if surgery is needed. These may include:

- A pelvic examination.
- A CA 125 blood test and/or other blood tests.
- Ultrasound, which uses sound waves to create a picture, would be used to view the ovaries by inserting a probe into the vagina to emit and receive the sound waves.

- Computed Tomography, also called CT or CAT scan, uses a rotating x-ray beam to create a series of pictures of the body from many angles.
- Magnetic Resonance Imaging, also call MRI, uses radio waves and strong magnets to create a series of pictures of the body from many angles.
- Positron emission tomography, also called PET scan, uses radioactive glucose to see where the cancer tissue may be within the body since cancer cells uptake a greater amount of glucose than normal cells.
- A barium enema x-ray (where barium sulfate is spread throughout the rectum and colon then an x-ray is taken of the rectum and colon) or colonoscopy (a thin, flexible tube is inserted into the rectum and colon in order to see if there are any ovarian cancer cells that have spread into the rectum or colon).
- Chest x-ray (this is done to see if the ovarian cancer had spread to the lungs).
- A biopsy.

The only definitive way to diagnose ovarian cancer is surgery to remove a tumor for laboratory evaluation under the microscope. This can be done through a *laparoscopy* or a *laparotomy*. Laparoscopy involves several tiny cuts made in the abdomen to insert a very small-lighted tube and instruments to view the abdominal organs and take tissue samples. A laparotomy is one large abdominal incision used to obtain tissue samples for diagnosis and to remove tumors if needed. When ovarian cancer is strongly suspected, surgery is generally done through a laparotomy.

How is ovarian cancer treated?

The choice of treatment depends largely on the type of cancer and the stage of the disease. When surgery is involved, a lymph node biopsy may be done to determine the stage of the disease. In patients who do not have surgery as their initial treatment, the exact stage of ovarian cancer may not be known. Treatment then is based on other available information. Other factors could play a part in choosing the best treatment plan. This might include your general state of health, whether you plan to have children, and other personal considerations. Age alone is not a determining factor since several studies have shown that older women tolerate ovarian cancer treatments well. Be sure you understand all the risks and side effects of the various therapies before making a decision about treatment.

The three main methods of treatment for ovarian cancer are:

1. Surgery
The goals of surgery are to make a definitive diagnosis, to determine stage of disease, and remove as much of the tumor as possible.
Different types of surgery may include:
- Unilateral salpingo-oophorectomy (removal of one ovary and one fallopian tube).
- Bilateral salpingo-oophorectomy (removal of both ovaries and both fallopian tubes).
- Hysterectomy (removal of the uterus).
- Omentectomy (partial or complete removal of the fatty apron of tissue—the omenum—that hangs from the colon).
- Lymph node biopsy (removal of lymph nodes for examination under a microscope to check for cancer cells).

2. Chemotherapy
Chemotherapy is the use of drugs to kill cancer cells.

- Chemotherapy may be taken by mouth or it may be put into the body by inserting a tube or catheter into a vein. Either type of chemotherapy is called systemic treatment because the drugs use the bloodstream to travel and kill cancer cells throughout the body.
- Another way to give chemotherapy is intraperitoneal chemotherapy (putting the drug directly into the abdomen through a very thin tube called a catheter). With this method, most of the drug remains in the abdomen.

3. Radiation Therapy
Radiation therapy is the use of x-rays or other types of radiation to kill cancer cells and shrink tumors. Radiation therapy may be either:

- External radiation (using a machine outside the body) or
- Internal radiation (putting radioisotopes materials that produce radiation through thin plastic tubes into the area where cancer cells are found).

Radiation is generally used when there is a localized area of disease to treat. Radiation therapy is rarely used initially to treat ovarian cancer.

Other types of treatment are being tested in clinical trials. Specially, there appears to be promise for targeted therapies aimed at specific proteins produced by tumors.

STATISTICS

How many people are diagnosed with ovarian cancer? How many people die from it?

- The American Cancer Society estimates that in 2007 there will be 22,430 new cases of ovarian cancer in the United States. There is no 2007 estimation for new cases of ovarian cancer in Massachusetts.

- The American Cancer Society also estimates in 2007 there will be 15,280 deaths from ovarian cancer in the United States. The estimated deaths from ovarian cancer for 2007 in Massachusetts are 360.

- The national five-year relative survival rates for 1996-2003 shows that 56.3% of females under 65 years of age and 29.1% of females that are 65 years of age and over survive five years after a diagnosis of ovarian cancer.

- In Massachusetts between 2000 and 2004, the age-adjusted incidence rate of ovarian cancer for women was 14.7 per 100,000 females.

- The age-adjusted mortality rate for ovarian cancer in Massachusetts women was 9.2 per 100,000 females between 2000 and 2004.

- The age-adjusted incidence rate of ovarian cancer is 8.9% higher in Massachusetts than nationally (based on data from the North American Association of Central Cancer Registries, 2000-2004).

- The age-adjusted mortality rate of ovarian cancer is 3.4% higher in Massachusetts than nationally (based on data from the North American Association of Central Cancer Registries, 2000-2004).

For additional statistics on ovarian cancer in Massachusetts, see Massachusetts Community Health Information Profile (MassCHIP) Instant Topics-Cancer: Ovary [http://masschip.state.ma.us/InstantTopics/affiliate.htm].

Need to click on an affiliation then find ovarian cancer for the instant topics.

DPH PROGRAMS AND INFORMATION

DPH ovarian cancer programs

The Department's Comprehensive Cancer Prevention and Control Program focuses on reducing cancer risk, incidence, morbidity, and mortality by promoting a healthy lifestyle, early diagnosis, treatment, rehabilitation, and access to care. The Department's programs address the impact of genetics, tobacco, alcohol, nutrition, physical activity, sun exposure, school health issues, and environmental and occupational hazards on cancer. The Department is working to decrease both incidence and mortality from most forms of cancer through strategies designed either to reduce risk factors related to cancer or to encourage early detection of cancers.

However, there are currently no programs at the Massachusetts Department of Public Health that are working on ovarian cancer exclusively. The lack of prevention measures that can be monitored and assessed makes program development for ovarian cancer difficult.

Publications and Materials

Reports

The following reports can be accessed from the Massachusetts Cancer Registry website at http://www.mass.gov/dph/bhsre/mcr/canreg.htm

- Statewide Reports: *Cancer Incidence and Mortality in Massachusetts – Statewide Report 2000-2004*
- City and Town Series: *Cancer Incidence in Massachusetts – City and Town Supplement 2000-2004*

Pamphlets, brochures, and videos

Ovarian Cancer Reference Card
http://www.maclearinghouse.com/CatalogPageFrameSet.htm

References

Adami, Hans-Olov, Hunter, David, and Trichopoulos, Dmitrios, eds. *Textbook of Cancer Epidemiology*. New York: Oxford University Press, 2002, pp. 378-399.

Henry, John Bernard. *Clinical Diagnosis & Management by Laboratory Methods*. Philadelphia: W. B. Saunders Company, 1991, pp. 285.

American Cancer Society
Findings on Hereditary Ovarian Cancer
Survival Longer for Women with BRCA-linked Ovarian Cancer
Article date 05/11/2000 Reference date 02/02/2005

http://www.cancer.org/docroot/NWS/content/NWS_1_1x_Findings_on_Hereditary_Ovarian_Cancer.asp

RELATED LINKS

Background/General Links

American Cancer Society (ACS)
- Learn About Cancer: All About Ovarian Cancer
  http://www.cancer.org/docroot/cri/cri_2x.asp?sitearea=lrn&dt=33

Centers for Disease Control and Prevention
- Ovarian Cancer
  http://www.cdc.gov/cancer/ovarian/index.htm

Harvard Center for Cancer Prevention (HCCP)
- Your Disease Risk: Ovarian Cancer
  http://www.yourdiseaserisk.harvard.edu/hccpquiz.pl?lang=english&func=home&quiz=ovarian

MEDLINEplus Health Topics
- Ovarian Cancer
  http://www.nlm.nih.gov/medlineplus/ovariancancer.html

National Cancer Institute (NCI)
- Ovarian Cancer
  http://www.cancer.gov/cancer_information/cancer_type/ovarian
- What You Need To Know About Ovarian Cancer
  http://www.cancer.gov/cancer_information/doc_wyntk.aspx?viewid=a88b5fcd-8dc8-4896-b9b5-107518b2b336

Prevention and Screening Links

National Cancer Institute (NCI)
- Ovarian Cancer (PDQ): Prevention
  http://www.cancer.gov/cancer_information/doc_pdq.aspx?version=patient&viewid=58d9b762-cc7e-4cbb-952f-c4f6e24fbf14
- Ovarian Cancer (PDQ): Screening
  http://www.cancer.gov/cancer_information/doc_pdq.aspx?version=patient&viewid=fb24ae08-5305-46e9-96e3-2499c3b5e5d6

Diagnosis and Treatment Links

American Cancer Society (ACS)
- NexProfiler Treatment Option Tool for Ovarian Cancer
  https://www.cancer.nexcura.com/Secure/InterfaceSecure.asp?CB=271

National Cancer Institute (NCI)

- Clinical Trials
  http://www.cancer.gov/clinical_trials/
- Ovarian Cancer: Treatment
  http://www.cancer.gov/cancertopics/treatment/ovarian
- Ovarian Cancer Trial Results
  http://www.cancer.gov/clinicaltrials/ovarian-cancer-updates
- Ovarian Epithelial Cancer (PDQ): Treatment
  http://www.cancer.gov/cancer_information/doc_pdq.aspx?version=patient&viewid=98f656ef-e2f8-4329-839f-ca8588977cdd - 9

Statistics Links

American Cancer Society (ACS)
- Statistics
  http://www.cancer.org/docroot/stt/stt_0.asp

Centers for Disease Control and Prevention (CDC) and National Cancer Institute (NCI)
- *United States Cancer Statistics: 2002 Incidence and Mortality*
  http://www.cdc.gov/cancer/npcr/uscs/index.htm

National Cancer Institute (NCI)
- Cancer Stat Fact Sheets – Cancer of the Ovary
  http://www.seer.cancer.gov/statfacts/html/ovary.html
- Surveillance, Epidemiology and End Results (SEER) Cancer Statistics Review, 1975-2003
  http://www.seer.cancer.gov/csr/1975_2003/

North American Association of Central Cancer Registries (NAACCR)
- Cancer Incidence Statistics
  http://www.naaccr.org/index.asp?Col_SectionKey=11&Col_ContentID=49